REMARKS/ARGUMENTS

Applicants respectfully request reconsideration of the present application in view of the foregoing amendments and in view of the reasons that follow. Claims 1, 5-8, 10, 11, 32, 34, 35, and 37 are currently being amended. Claim 24 is currently being withdrawn from consideration. After amending the claims as set forth above, Claims 1-11 and 32-37 are now pending in this application.

I. Clarification of Applicants' Elected Claims

Applicants would like to clarify that Claims 12-24 have been withdrawn from the present application. In the Restriction Requirement dated June 13, 2006, the Examiner stated that Claims 1-11 and 24-37 are drawn to a first invention and Claims 12-23 are drawn to a second invention. As a result, in a response dated August 9, 2006, Applicants provisionally elected Claims 1-11 and 24-37 with traverse. However, Claim 24 is a dependent claim which depends from Claim 23. Therefore, Applicants have withdrawn Claim 24 from consideration such that Claims 1-11 and 32-37 are currently pending.

II. Claim Rejections Under 35 U.S.C. §§ 102(a) & 102(e)

In Section 5 of the Office Action, Claims 1-9 and 32-37 are rejected under 35 U.S.C. §§ 102(a) & 102(e) as being anticipated by PCT International Publication No. WO 02/054052 to Fish (hereinafter "Fish"). Applicants respectfully traverse the rejection.

Claim 1, as currently amended and with emphasis added, recites:

> A modified substrate comprising:
> (a) a substrate having a surface, the surface having at least one biomolecule **covalently linked thereto**; and
> (b) at least one nanocylinder having at least one complementary biomolecule **covalently linked thereto**;
> wherein the at least one nanocylinder is attached to the surface through **biomolecular interactions between the at least one biomolecule covalently linked to the surface and the at**

least one complementary biomolecule on the at least one nanocylinder.

Claim 32, as currently amended and with emphasis added, recites:

> A nanocylinder bridge comprising:
> (a) a first surface having at least one biomolecule **covalently linked thereto**;
> (b) a second surface having at least one biomolecule **covalently linked thereto**; and
> (c) a nanocylinder having at least two biomolecules **covalently linked thereto**, wherein one of the at least two biomolecules on the nanocylinder is bound to the at least one biomolecule on the first surface through **biomolecular interactions between said biomolecule on the nanocylinder and said biomolecule on the first surface** and the other of the at least two biomolecules on the nanocylinder is bound to the at least one biomolecule on the second surface through **biomolecular interactions between said biomolecule on the nanocylinder and said biomolecule on the second surface** to form a bridge between the first and the second surfaces.

Claim 37, as currently amended and with emphasis added, recites:

> A patterned surface comprising a surface having a plurality of nanocylinders arranged thereon in a predetermined pattern, wherein the nanocylinders are attached to the surface by **biomolecular interactions between biomolecules covalently linked to the surface** and their **complementary biomolecules covalently linked to the nanocylinder**, and further wherein the pattern is predetermined by the locations of the biomolecules on the surface and their complementary biomolecules on the nanocylinders.

Applicants respectfully submit that Fish does not teach, suggest, or describe a nanocylinder which is bound to a surface as a result of a direct biomolecular interaction between a biomolecule which is covalently linked to the nanocylinder and a biomolecule which is covalently linked to the surface, as required by Claims 1, 32, and 37.

Fish discloses "amino terminated oligonucleotides" which are attached to the opposing ends of "nano-tubes 26" to form "binding sites on the nano-tubes 26." (Page 19, lines 4-6). The

amino terminated oligonucleotides on the ends of the nano-tubes bind with "analytes 15a and 15b," and the analytes in turn bind with "binding agents 16 and 16a" on "surfaces of the electrodes 20 and 21." (Page 19, lines 6-10; Fig. 2D.) Fish also discloses that "the **analytes** 15a and 15b ... **must both be present**." (Page 19, line 7; emphasis added). In other words, Fish discloses a nano-tube which is indirectly bound to a surface using an analyte which interacts with both a molecule bound to the nano-tube and a molecule bound to the surface. (*See* Fig. 2D.)

Applicants respectfully submit that Fish does not teach, suggest, or describe binding a nanocylinder to a surface through biomolecular interactions between the a biomolecule covalently linked to the surface and the a biomolecule covalently linked to the nanocylinder, as required by Claim 1. (Emphasis added). The interactions disclosed in Fish are not between a biomolecule covalently linked to the surface and a biomolecule covalently linked to a nanocylinder. Rather, the interactions disclosed in Fish are between an analyte and a molecule bound to a nano-tube and the analyte and a molecule bound to the surface. Applicants respectfully submit that using an analyte to bind two molecules is not the same as a direct bond between a biomolecule which is covalently linked to a surface and a biomolecule which is covalently linked to a nanocylinder.

Applicants also respectfully submit that Fish does not teach, suggest, or describe binding a nanocylinder using two biomolecules covalently linked thereto, wherein one biomolecule on the nanocylinder is bound to a biomolecule covalently linked to the first surface through biomolecular interactions between said biomolecule on the nanocylinder and said biomolecule on the first surface and the other biomolecule on the nanocylinder is bound to a biomolecule covalently linked to the second surface through biomolecular interactions between said biomolecule on the nanocylinder and said biomolecule on the second surface to form a bridge, as required by Claim 32. Nor does Fish teach, suggest, or describe "nanocylinders [which] are attached to the surface by biomolecular interactions between biomolecules covalently linked to the surface and their complementary biomolecules covalently linked to the nanocylinder," as required by Claim 37. (Emphasis added). As discussed above, the interactions disclosed in Fish

are between analytes and bound molecules. An indirect interaction between an analyte and two bound molecules is not the same as a direct biomolecular interaction between a molecule which is covalently linked to a surface and a molecule which is covalently linked to a nanocylinder.

For at least these reasons, Applicants respectfully submit that Fish does not disclose each of the claim limitations required by Claims 1, 32, and 37. As such, Applicants respectfully request withdrawal of the rejection of Claims 1, 32, and 37, and dependent Claims 2-11 and 33-36 which depend from Claims 1 and 32, respectively.

Applicants further submit that it would not be obvious to modify Fish to include a covalent bond, directly or indirectly, between the analyte and either the electrode surface or a nano-tube. "If a proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification." (M.P.E.P. 2143l01.V., citing *In re Gordon*, 733 F.2d 900.) Clearly, if the analyte in Fish were covalently bound to either the electrode surface or the nano-tube, it would no longer be free to interact with the binding agents on the surface and the binding agents on the nano-tube. This would render the device of Fish unsatisfactory for its intended purpose as a diagnostic instrument.

III. Claim Rejections Under 35 U.S.C. § 103(a)

In Section 8 of the Office Action, Claims 10 and 11 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Fish in view of an article entitled "Synthesis and Characterization of DNA-Modified Silicon," *J. Am. Chem. Soc.* 2000, 122, 1205-1209 by Strother et al. (hereinafter "Strother"). Applicants respectfully traverse the rejection.

Applicants respectfully submit that, alone or in combination, Fish and Strother do not teach, suggest, or describe each of the limitations required by Claim 1. As discussed above, Fish does not disclose binding a nanocylinder to a "surface through biomolecular interactions between the ... biomolecule ... [covalently linked to] the surface and the ... biomolecule ... [covalently

linked to] the ... nanocylinder," as required by Claim 1. Similarly, Strother does not teach, suggest, or describe a direct bond between a biomolecule which is covalently linked to a nanocylinder and a biomolecule which is covalently linked to a surface. As such, Applicants respectfully submit that Claim 1 is in condition for allowance and respectfully request withdrawal of the rejection of Claims 10 and 11, which depend from Claim 1.

Applicants believe that the present application is now in condition for allowance. Favorable reconsideration of the application as amended is respectfully requested.

The Examiner is invited to contact the undersigned by telephone if it is felt that a telephone interview would advance the prosecution of the present application.

The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 50-2350. Should no proper payment be enclosed herewith, as by a check or credit card payment form being in the wrong amount, unsigned, post-dated, otherwise improper or informal or even entirely missing, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 50-2350. If any extensions of time are needed for timely acceptance of papers submitted herewith, Applicants hereby petition for such extension under 37 C.F.R. §1.136 and authorize payment of any such extensions fees to Deposit Account No. 50-2350.

Respectfully submitted,

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By _____

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